

Sector 22. Printing. Cost Factors.

Cost Factor =	Value*	Explanation
Instruments (10% of direct) =	10	meters and sensors
Freight (5% of direct) =	5	shipping
Installation (44% of direct) =	44	associated piping, electrical equipment, and materials
Startup and Contingency (31% of direct) =	31	spares, bonding, engineering, startup, shakedown, and contingency
Maintenance (5% of capital) =	5	replacement parts and labor
Inspection (1% of capital) =	1	inspection
Electricity Cost (\$0.04840/kwh) =	0.0484	Rolling 12-months ending in March; Average Revenue per Kilowatthour from Retain Sales to Ultimate Consumers (Industry). Electric Power Monthly June 2003. Energy Information Administration
Useful Life (10 years) =	10	payment period
Discount Rate (7%) =	7	interest rate
Annualized Factor For Initial Costs for Engineering Controls (14.24% of capital) =	14.24	based on useful life and discount rate
Annualized Factor For Engineering Controls Beginning End of Second Year (74.26% of capital) =	74.26	based on useful life and discount rate
Escalation Factor (1.038) =	1.038	Chemical Engineering Magazine Plant Cost Index or similar (current year/past year)

* The cost factor value can be edited and changes will be reflected in all industry sectors

Sector 22. Printing. Unit Costs.

Cost Description	Base Cost	Escalation Factor	Unit Cost
Cost per hour for an outside industrial hygiene contractor	\$90.00	1	\$90.00
Cost of a personal sampling pump	\$680.00	1	\$680.00
Variable Cost per sample (e.g., laboratory analysis)	\$60.00	1	\$60.00
Flat Fee For Training Course	\$400.00	1	\$400.00
Cost of a calibration unit	\$1,075.00	1	\$1,075.00
Unit cost of OSHA-regulation warning signs with mounting materials	\$3.03	1.2702	\$3.84
Cost of materials per qualitative fit-testing	\$0.07	1	\$0.07
Unit cost per worker for an air-supplied respirator	\$1,473.33	1	\$1,473.33
Unit cost per employee for a full-face respirator	\$243.00	1	\$243.00
Unit cost per employee for a half-mask respirator	\$35.30	1	\$35.30
Cost of replacement cartridges (2 cartridges per mask)	\$13.74	1	\$13.74
Unit cost per employee for a blasting helmet air-supplied respirator	\$1,164.00	1	\$1,164.00
Cost of materials to clean one respirator	\$1.86	1	\$1.86
Cost of PE coated Tyvek coveralls	\$6.60	1	\$6.60
Cost of Saranex coveralls	\$32.85	1	\$32.85
Cost of Tyvek coveralls	\$4.50	1	\$4.50
Cost of bib aprons	\$0.58	1	\$0.58
Cost of laundering uniforms for one employee per week	\$5.50	1	\$5.50
Cost of laundering lab coats for one employee per week	\$3.75	1	\$3.75
Cost of clear indirect vent goggles	\$10.10	1	\$10.10
Cost of clear lens safety glasses	\$8.90	1	\$8.90
Cost of grey lens safety glasses	\$8.20	1	\$8.20
Cost of lined nitrile gloves	\$2.50	1	\$2.50
Cost of powder surgical nitrile gloves	\$0.24	1	\$0.24
Cost of rough PVC gloves	\$4.10	1	\$4.10
Unit cost of changerooms per employee	\$856.00	1.4742	\$1,261.92
Cost per shower head	\$3,590.00	1.4742	\$5,292.39
Cost per handwashing facility	\$500.00	1	\$500.00
Variable cost per shower (soap, clean towel, water, etc.)	\$0.50	1	\$0.50
Variable cost per handwashing facility (roll paper towels, liquid soap, water)	\$0.06	1	\$0.06
Unit cost of HEPA vacuums	\$1,580.00	1.4742	\$2,329.24
Unit cost of HEPA vacuum replacement filters	\$212.00	1.4742	\$312.53
Unit cost of garbage bags and disposal	\$500.00	1	\$500.00
Full cost of a comprehensive medical exam	\$282.00	1.4211	\$400.76
Full cost of a limited medical exam	\$125.00	1.0000	\$125.00
Cost of additional medical testing after exam results are abnormal	\$150.00	1.4211	\$213.17
Cost of a partial comprehensive medical exam	\$141.00	1.4211	\$200.38
Cost of a partial limited medical exam	\$75.00	1.4211	\$106.59
Cost per employee for training aids and materials	\$2.00	1	\$2.00
Cost per employee for computer file space	\$1.00	1	\$1.00

Sector 22. Printing. Wage Rates.

Section	Non-Supervisory Wage Rate (\$/hour)	Supervisor Wage Rate (\$/hour)	Clerical Wage Rate (\$/hour)	Janitorial Wage Rate (\$/hour)	BiLingual Trainer Wage Rate (\$/hour)
1	\$15.41	21.58	11.12	8.42	17.72
2	\$15.17	21.24	10.95	8.29	17.45
4	\$22.40	31.37	16.16	12.24	25.76
5	\$21.83	30.57	15.75	11.93	25.10
6	\$18.49	25.89	13.34	10.10	21.26
7	\$22.40	31.37	16.16	12.24	25.76
8	\$16.68	23.36	12.04	9.11	19.18
9	\$16.71	23.40	12.06	9.13	19.22
10	\$18.52	25.93	13.36	10.12	21.30
11	\$16.62	23.27	11.99	9.08	19.11
12	\$13.76	19.27	9.93	7.52	15.82
13	22.47	31.47	16.21	12.28	25.84
14	22.47	31.47	16.21	12.28	25.84
15	16.39	22.95	11.83	8.96	18.85
17	21.83	30.57	15.75	11.93	25.10
18	24.03	33.65	17.34	13.13	27.63
19	17.33	24.27	12.50	9.47	19.93
20	11.56	16.19	8.34	6.32	13.29
21	16.72	23.41	12.06	9.14	19.23
22	12.07	16.90	8.71	6.60	13.88
23	12.36	17.31	8.92	6.75	14.21
24	18.82	26.35	13.58	10.28	21.64
25	14.85	20.80	10.72	8.11	17.08
26	18.59	26.03	13.41	10.16	21.38
27	15.77	22.08	11.38	8.62	18.14
29	14.41	20.18	10.40	7.87	16.57
30	16.17	22.64	11.67	8.84	18.60
31	18.61	26.06	13.43	10.17	21.40
32	15.97	22.36	11.52	8.73	18.37

Sector 22. Printing. Engineering Capital.

22. PRINTING	
Alternative PEL (ug/m ³)	0.25
Affected Job Category	None
Page	21-10
Required Controls	None
CAPITAL*	
Direct equipment (quoted)	\$0
+ Instruments (10% of direct)	\$0
+ Freight (5% of direct)	\$0
+ Installation (44% of direct)	\$0
+ Startup and Contingency (31% of direct)	\$0
Total Capital	\$0
ANNUALIZED	
O&M	
Maintenance (5% of capital)	\$0
+ Inspection (1% of capital)	\$0
+ Electricity	\$0
+ Electric motor HP	0
+ Annual Kwh	0
Total O&M	\$0
+ Annualized Initial Costs (14.24% of capital)	\$0
Total Annualized Cost	\$0
Rounded Total Annualized Cost	\$0
ASSUMPTIONS	
+ ACFM	
+ Length of ductwork, feet	
+ Room size	
+ Other	
DESIGN BASIS	No Engineering Controls Required for this Industry Sector

* Some vendors supplied cost for only the equipment while others supplied the cost for equipment and complete installation. In cases where vendors supplied only the cost of equipment, the cost for instruments, freight, installation, and indirect costs were estimated. The cost for instruments, freight, and indirects were included in the cost for installation for vendors supplying costs for equipment and installation. For those cases where instruments, freight, installation, and indirect costs are listed separately; instrumentation includes meters and sensors; installation includes associated piping, and electrical equipment and materials; and indirect costs includes spares, bonding, engineering, startup and shutdown, and contingency.

Sources:

Sector 22. Printing. Engineering Controls by PEL.

22. PRINTING	
Alternative PEL (ug/m ³)	1
Affected Job Category	None
Page	21-10
Required Controls	None
LARGE PLANT COSTS	
Total Annualized Cost	\$0
Number of Large Plants	100
Number of Controls per Large Plant	0
Percentage of Large Plants with Workers > PEL	0%
Percentage of Large Plants without Control	0%
Total Number of Controls for Large Plants	0
Annualized Cost to Large Plants	\$0
SMALL PLANT COSTS	
Total Annualized Cost	\$0
Number of Small Plants	400
Number of Controls per Small Plant	0
Percentage of Small Plants with Workers > PEL	0%
Percentage of Small Plants without Control	0%
Total Number of Controls for Small Plants	0
Annualized Cost to Small Plants	\$0

Sector 22. Printing. Exposure Distribution.

Number of Affected Establishments	
Small Establishments (≤ 20 employees)	400
Large Establishments (> 20 employees)	100
Total Establishments	500

Number of Establishments in Industry Sector	
Number of Establishments ≤ 20 employees	3,205
Number of Establishments 20 - 499 employees	791
Number of Establishments > 500 employees	7

Number of Employees Exposed to Hexavalent Chromium by Job Category in the Printing Industry			
Job Category	Number of Employees in Large Facilities	Number of Employees in Small Facilities	Total Number of Employees
Printers	4,500	1,200	5,700
Mixers	200	0	200
Shippers	300	400	700
Total	5,000	1,600	6,600

Job Category	Total No. of Workers	Printing Industry CrVI Worker Exposure Distribution (ug/m3)						
		<LOD	LOD to <0.25	>0.25 to 0.5	>0.5 to 1.0	>1.0 to 5.0	>5.0 to 10.0	>10.0
Printers	5,700	5,700	0	0	0	0	0	0
Mixers	200	200	0	0	0	0	0	0
Shippers	700	700	0	0	0	0	0	0
Total	6,600	6,600	0	0	0	0	0	0

Job Category	Printing Industry CrVI Worker Exposure Percentage Distribution (ug/m3)						
	<LOD	LOD to <0.25	>0.25 to 0.5	>0.5 to 1.0	>1.0 to 5.0	>5.0 to 10.0	>10.0
Printers	100%	0%	0%	0%	0%	0%	0%
Mixers	100%	0%	0%	0%	0%	0%	0%
Shippers	100%	0%	0%	0%	0%	0%	0%
Total	100%	0%	0%	0%	0%	0%	0%

Job Category	Printing Industry CrVI Worker Exposure Cumulative Percentage Distribution (ug/m3)				
	>0.25	>0.5	>1.0	>5.0	>10.0
Printers	0%	0%	0%	0%	0%
Mixers	0%	0%	0%	0%	0%
Shippers	0%	0%	0%	0%	0%
Total	0%	0%	0%	0%	0%

Sector 22. Printing. Engineering Capital Costs - Large Establishments.

Incremental Annualized Costs to Large Printing Establishments					
PEL (ug/m³)	0.25	0.5	1	5	10
No Engineering Controls	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$0

Cumulative Annualized Costs to Large Printing Establishments					
PEL (ug/m³)	0.25	0.5	1	5	10
No Engineering Controls	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Engineering Capital Costs - Small Establishments.

Incremental Annualized Costs to Small Printing Establishments					
PEL (ug/m ³)	0.25	0.5	1	5	10
No Engineering Controls	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$0

Cumulative Annualized Costs to Small Printing Establishments					
PEL (ug/m ³)	0.25	0.5	1	5	10
No Engineering Controls	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Exposure Monitoring Costs - Large Establishments.

22. PRINTING							
Cost of Exposure Monitoring to Large Establishments							
Alternative PEL (ug/m3)	N/A	Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	Affected Job Category	All	All	All	All	All
Required Controls	Exposure Monitoring	Required Controls	Exposure Monitoring	Exposure Monitoring	Exposure Monitoring	Exposure Monitoring	Exposure Monitoring
Capital		Annualized					
Number of plants represented by the model input	100	O&M					
Percent of Plants that will continue to use an outside contractor for monitoring	90%	Percent of plants not performing quarterly monitoring requirements	100%	100%	100%	100%	100%
Percent of plants already with In-house monitoring capabilities	10%	Number of job categories exposed at or above the PEL	0	0	0	0	0
Percent of plants that have not satisfied the initial monitoring requirement	75%	Percent of plants that have an employees in at least one job category above the PEL	100%	100%	100%	100%	100%
Percent of plants that will develop in house monitoring capability	0%	Time, in hours, for an outside contractor (Industrial hygiene technician) to conduct quarterly-annual monitoring	0	0	0	0	0
Number of initial exposure measurements required to be satisfied with semi-annual monitoring requirements	2	Percent of plants not performing semi-annual monitoring requirements	100%	100%	100%	100%	100%
Number of personal sampling pumps required	5	Number of job categories exposed at or above the action level	0	0	0	0	0
Number of samples per exposure measurement	2	Percent of plants that have an employees in at least one job category above the AL	100%	100%	100%	100%	100%
In-house administrative time (e.g., for pump calibration and report writing) per sample, in hours	0.5	Time, in hours, for an outside contractor (Industrial hygiene technician) to conduct semi-annual monitoring	0	0	0	0	0
Cost per hour for an outside Industrial hygiene contractor	\$90.00	Useful life, in years, of a personal sampling pump	10	10	10	10	10
Time, in hours, for an outside contractor (Industrial hygiene technician) to conduct the initial monitoring	12	Annual O&M cost of a personal sampling pump as a percentage of capital cost (assumed to be 10% of capital cost)	10%	10%	10%	10%	10%
Total number of job categories (covering each work area)	3	Cost of laboratory processing samples associated with quarterly monitoring	\$0	\$0	\$0	\$0	\$0
Non-supervisory wage rate, \$/hr	\$12.07	Administrative cost of associated with quarterly monitoring	\$0	\$0	\$0	\$0	\$0
Time, in hours, to notify an employee of the exposure monitoring results	0.25	Cost of outside contractor for quarterly monitoring	\$0	\$0	\$0	\$0	\$0
Cost of a personal sampling pump	\$680.00	Cost associated with notifying employees of quarterly monitoring results	\$0	\$0	\$0	\$0	\$0
Variable cost per sample (e.g., laboratory analysis)	\$60.00	Quarterly monitoring O&M cost	\$0	\$0	\$0	\$0	\$0
Number of work shifts	3	Cost of laboratory processing samples associated with semi-annual monitoring	\$0	\$0	\$0	\$0	\$0
Supervisory wage rate, \$/hr	\$16.90	Administrative cost of associated with semi-annual monitoring	\$0	\$0	\$0	\$0	\$0
Number of hours of training required to develop in-house monitoring capability	16	Cost of outside contractor for semi-annual monitoring	\$0	\$0	\$0	\$0	\$0
Flat fee for training	\$400.00	Cost associated with notifying employees of semi-annual monitoring results	\$0	\$0	\$0	\$0	\$0
Number of calibration units required	1	Semi-annual monitoring O&M cost	\$0	\$0	\$0	\$0	\$0
Cost of a calibration unit	\$1,075.00	Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
Capital cost of exposure monitoring	\$0.00	+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Up-front cost of exposure monitoring	\$333,873.00	Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
		Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Exposure Monitoring Costs - Small Establishments.

22. PRINTING							
Cost of Exposure Monitoring to Small Establishments							
Alternative PEL (ug/m3)	N/A	Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	Affected Job Category	All	All	All	All	All
Required Controls	Exposure Monitoring	Required Controls	Exposure Monitoring	Exposure Monitoring	Exposure Monitoring	Exposure Monitoring	Exposure Monitoring
Capital		Annualized					
Number of plants represented by the model input	400	O&M					
Percent of Plants that will continue to use an outside contractor for monitoring	90%	Percent of plants not performing quarterly monitoring requirements	100%	100%	100%	100%	100%
Percent of plants already with in-house monitoring capabilities	10%	Number of job categories exposed at or above the PEL	0	0	0	0	0
Percent of plants that have not satisfied the initial monitoring requirement	75%	Percent of plants that have an employees in at least on job category above the PEL	100%	100%	100%	100%	100%
Percent of plants that will develop in house monitoring capability	0%	Time, in hours, for an outside contractor (Industrial hygiene technician) to conduct quarterly-annual monitoring	0	0	0	0	0
Number of initial exposure measurements required to be satisfied with semi-annual monitoring requirements	2	Percent of plants not performing semi-annual monitoring requirements	100%	100%	100%	100%	100%
Number of personal sampling pumps required	2	Number of job categories exposed at or above the action level	0	0	0	0	0
Number of samples per exposure measurement	2	Percent of plants that have an employees in at least on job category above the AL	100%	100%	100%	100%	100%
In-house administrative time (e.g., for pump calibration and report writing) per sample, in hours	0.5	Time, in hours, for an outside contractor (Industrial hygiene technician) to conduct semi-annual monitoring	0	0	0	0	0
Cost per hour for an outside industrial hygiene contractor	\$90.00	Useful life, in years, of a personal sampling pump	10	10	10	10	10
Time, in hours, for an outside contractor (Industrial hygiene technician) to conduct the initial monitoring	12	Annual O&M cost of a personal sampling pump as a percentage of capital cost (assumed to be 10% of capital cost)	10%	10%	10%	10%	10%
Total number of job categories (covering each work area)	2	Cost of laboratory processing samples associated with quarterly monitoring	\$0	\$0	\$0	\$0	\$0
Non-supervisory wage rate, \$/hr	\$12.07	Administrative cost of associated with quarterly monitoring	\$0	\$0	\$0	\$0	\$0
Time, in hours, to notify an employee of the exposure monitoring results	0.25	Cost of outside contractor for quarterly monitoring	\$0	\$0	\$0	\$0	\$0
Cost of a personal sampling pump	\$680.00	Cost associated with notifying employees of quarterly monitoring results	\$0	\$0	\$0	\$0	\$0
Variable cost per sample (e.g., laboratory analysis)	\$60.00	Quarterly monitoring O&M cost	\$0	\$0	\$0	\$0	\$0
Number of work shifts	1	Cost of laboratory processing samples associated with semi-annual monitoring	\$0	\$0	\$0	\$0	\$0
Supervisory wage rate, \$/hr	\$16.90	Administrative cost of associated with semi-annual monitoring	\$0	\$0	\$0	\$0	\$0
Number of hours of training required to develop in-house monitoring capability	16	Cost of outside contractor for semi-annual monitoring	\$0	\$0	\$0	\$0	\$0
Flat fee for training course	\$400.00	Cost associated with notifying employees of semi-annual monitoring results	\$0	\$0	\$0	\$0	\$0
Number of calibration units required	1	Semi-annual monitoring O&M cost	\$0	\$0	\$0	\$0	\$0
Cost of a calibration unit	\$1,075.00	Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
Capital cost of exposure monitoring	\$0.00	+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Up-front cost of exposure monitoring	\$750,376.00	Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
		Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Regulated Area Costs - Large Establishments.

22. PRINTING					
Cost of Regulated Areas - Signs and Labels to Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels
Capital					
Number of plants represented by the model plant	100	100	100	100	100
Percent of plants requiring additional warning signs for regulated areas	100%	100%	100%	100%	100%
Number of warning signs required for each regulated area	2	2	2	2	2
Number of job categories exposed above the PEL	0	0	0	0	0
Non-supervisory wage, \$/hr	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Unit cost of OSHA-regulation warning signs with mounting materials	\$3.84	\$3.84	\$3.84	\$3.84	\$3.84
Useful life, in years, of a warning sign	10	10	10	10	10
Time, in hours, to mount a warning sign	25.25	0.5	0.5	0.5	0.5
Total capital cost of regulated areas - signs and labels	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized O&M					
Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Regulated Area Costs - Small Establishments.

22. PRINTING					
Cost of Regulated Areas - Signs and Labels to Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels	Regulated Areas - Signs and Labels
Capital					
Number of plants represented by the model plant	400	400	400	400	400
Percent of plants requiring additional warning signs for regulated areas	100%	100%	100%	100%	100%
Number of warning signs required for each regulated area	2	2	2	2	2
Number of job categories exposed above the PEL	0	0	0	0	0
Non-supervisory wage, \$/hr	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Unit cost of OSHA-regulation warning signs with mounting materials	\$3.84	\$3.84	\$3.84	\$3.84	\$3.84
Useful life, in years, of a warning sign	10	10	10	10	10
Time, in hours, to mount a warning sign	25.25	0.5	0.5	0.5	0.5
Total capital cost of regulated areas - signs and labels	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized O&M					
Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Respirator Fit Testing Costs - Large Establishments.

22. PRINTING					
Cost of Respirator Fit-Testing to Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	None	None	None	None	None
Required Controls	Respirator-Testing	Respirator-Testing	Respirator-Testing	Respirator-Testing	Respirator-Testing
Capital					
Total capital cost of respirator fit-testing	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized					
O&M					
Number of plants represented by the model plant	100	100	100	100	100
Percent of plants conducting annual respirator fit-testing in the baseline	2%	2%	2%	2%	2%
Non-supervisory wage rate	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Number of employees requiring annual qualitative fit-testing	0	0	0	0	0
Cost of materials per qualitative fit-testing	\$0.07	\$0.07	\$0.07	\$0.07	\$0.07
Time, in hours, for a technician to conduct one qualitative fit-test	0.25	0.25	0.25	0.25	0.25
Time, in hours, for an employee to be qualitative fit-tested	0.25	0.25	0.25	0.25	0.25
Time, in hours, for an employee to be quantitative fit-tested	0.5	0.5	0.5	0.5	0.5
Number of employees requiring annual quantitative fit-testing	0	0	0	0	0
Cost of an industrial hygiene technician contractor per quantitative fit-test	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Respirator Fit Testing Costs - Small Establishments.

22. PRINTING					
Cost of Respirator Fit-Testing to Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	None	None	None	None	None
Required Controls	Respirator-Testing	Respirator-Testing	Respirator-Testing	Respirator-Testing	Respirator-Testing
Capital					
Total capital cost of respirator fit-testing	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized O&M					
Number of plants represented by the model plant	400	400	400	400	400
Percent of plants conducting annual respirator fit-testing in the baseline	0.3%	0.3%	0.3%	0.3%	0.3%
Non-supervisory wage rate	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Number of employees requiring annual qualitative fit-testing	0	0	0	0	0
Cost of materials per qualitative fit-testing	\$0.07	\$0.07	\$0.07	\$0.07	\$0.07
Time, in hours, for a technician to conduct one qualitative fit-test	0.25	0.25	0.25	0.25	0.25
Time, in hours, for an employee to be qualitative fit-tested	0.25	0.25	0.25	0.25	0.25
Time, in hours, for an employee to be quantitative fit-tested	0.5	0.5	0.5	0.5	0.5
Number of employees requiring annual quantitative fit-testing	0	0	0	0	0
Cost of an industrial hygiene technician contractor per quantitative fit-test	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Respirator Protection Costs - Large Establishments.

22. PRINTING					
Cost of Respirator Protection for Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	None	None	None	None	None
Required Controls	Respirator Protection	Respirator Protection	Respirator Protection	Respirator Protection	Respirator Protection
Capital					
Number of plants represented by the model plant	100	100	100	100	100
Percent of the workers using air-supplied respirators	0%	0%	0%	0%	0%
Percent of the workers using full-face respirators	0%	0%	0%	0%	0%
Percent of the workers using half-mask respirators	0.3%	0.3%	0.3%	0.3%	0.3%
Percent of the workers using blasting helmet air-supplied respirators	0%	0%	0%	0%	0%
Unit cost per worker for an air-supplied respirator	\$1,473.33	\$1,473.33	\$1,473.33	\$1,473.33	\$1,473.33
Number of workers requiring air-supplied respirators because above PEL	0	0	0	0	0
Number of workers requiring air-supplied respirators because above AL	0	0	0	0	0
Unit cost per employee for a full-face respirator	\$25.25	\$243.00	\$243.00	\$243.00	\$243.00
Number of workers requiring full-face respirators because above PEL	0	0	0	0	0
Number of workers requiring full-face respirators because above AL	0	0	0	0	0
Unit cost per employees for a half-mask respirator	\$35.30	\$35.30	\$35.30	\$35.30	\$35.30
Number of workers requiring half-mask respirators because above PEL	0	0	0	0	0
Number of workers requiring half-mask respirators because above AL	0	0	0	0	0
Unit cost per employee for a blasting helmet air-supplied respirator	\$1,164.00	\$1,164.00	\$1,164.00	\$1,164.00	\$1,164.00
Number of workers requiring blasting helmet air-supplied respirators above PEL	0	0	0	0	0
Number of workers requiring blasting helmet air-supplied respirators above AL	0	0	0	0	0
Total capital cost for respirators	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized O&M					
Number of shifts per day	3	3	3	3	3
Number of operating days per year	250	250	250	250	250
Number of days a respirator filter cartridge may be in use before it must be changed	2	2	2	2	2
Cost of replacement cartridges (2 cartridges per mask)	\$13.74	\$13.74	\$13.74	\$13.74	\$13.74
Useful life, in years, for an air-supplied respirator	10	10	10	10	10
Useful life, in years, for a full-face respirator	10	10	10	10	10
Useful life, in years, for a half-mask respirator	10	10	10	10	10
Useful life, in years, of a blasting helmet air-supplied respirator	10	10	10	10	10
Non-supervisory wage rate, \$/hour	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Cost of materials to clean one respirator	\$1.86	\$1.86	\$1.86	\$1.86	\$1.86
Time, in hours, for an employee to clean a respirator	0.167	0.167	0.167	0.167	0.167
Number of operating days per year that employees above the AL must wear respirators because of process upsets	20	20	20	20	20
Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
+ Annualized capital cost of respirator protection	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. Respirator Protection Costs - Small Establishments.

22. PRINTING					
Cost of Respirator Protection for Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	None	None	None	None	None
Required Controls	Respirator Protection	Respirator Protection	Respirator Protection	Respirator Protection	Respirator Protection
Capital					
Number of plants represented by the model plant	400	400	400	400	400
Percent of the workers using air-supplied respirators	0%	0%	0%	0%	0%
Percent of the workers using full-face respirators	0%	0%	0%	0%	0%
Percent of the workers using half-mask respirators	0.2%	0.2%	0.2%	0.2%	0.2%
Percent of the workers using blasting helmet air-supplied respirators	0%	0%	0%	0%	0%
Unit cost per worker for an air-supplied respirator	\$1,473.33	\$1,473.33	\$1,473.33	\$1,473.33	\$1,473.33
Number of workers requiring air-supplied respirators because above PEL	0	0	0	0	0
Number of workers requiring air-supplied respirators because above AL	0	0	0	0	0
Unit cost per employee for a full-face respirator	\$25.25	\$243.00	\$243.00	\$243.00	\$243.00
Number of workers requiring full-face respirators because above PEL	0	0	0	0	0
Number of workers requiring full-face respirators because above AL	0	0	0	0	0
Unit cost per employees for a half-mask respirator	\$35.30	\$35.30	\$35.30	\$35.30	\$35.30
Number of workers requiring half-mask respirators because above PEL	0	0	0	0	0
Number of workers requiring half-mask respirators because above AL	0	0	0	0	0
Unit cost per employee for a blasting helmet air-supplied respirator	\$1,164.00	\$1,164.00	\$1,164.00	\$1,164.00	\$1,164.00
Number of workers requiring blasting helmet air-supplied respirators above PEL	0	0	0	0	0
Number of workers requiring blasting helmet air-supplied respirators above AL	0	0	0	0	0
Total capital cost for respirators	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized O&M					
Number of shifts per day	1	1	1	1	1
Number of operating days per year	250	250	250	250	250
Number of days a respirator filter cartridge may be in use before it must be changed	2	2	2	2	2
Cost of replacement cartridges (2 cartridges per mask)	\$13.74	\$13.74	\$13.74	\$13.74	\$13.74
Useful life, in years, for an air-supplied respirator	10	10	10	10	10
Useful life, in years, for a full-face respirator	10	10	10	10	10
Useful life, in years, for a half-mask respirator	10	10	10	10	10
Useful life, in years, of a blasting helmet air-supplied respirator	10	10	10	10	10
Non-supervisory wage rate, \$/hour	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Cost of materials to clean one respirator	\$1.86	\$1.86	\$1.86	\$1.86	\$1.86
Time, in hours, for an employee to clean a respirator	0.167	0.167	0.167	0.167	0.167
Number of operating days per year that employees above the AL must wear respirators because of process upsets	20	20	20	20	20
Total Annualized O&M Cost	\$0	\$0	\$0	\$0	\$0
+ Annualized capital cost of respirator protection	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$0	\$0	\$0	\$0	\$0
Rounded Annualized Cost	\$0	\$0	\$0	\$0	\$0

Sector 22. Printing. PPE Costs - Large Establishments.

22. PRINTING					
Cost of Personal Protective Equipment for Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	None
Required Controls	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment
Capital					
Total capital cost of personal protective clothing and equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized O&M					
Number of plants represented by the model plant	100	100	100	100	100
Percentage of plants in the baseline that supplied coveralls or aprons	70%	70%	70%	70%	70%
Percentage of plants in the baseline that supply eye protection	63%	63%	63%	63%	63%
Percentage of plants in the baseline that supply gloves	70%	70%	70%	70%	70%
Percentage of employers that will pay for coveralls or aprons according to industry practice under proposed standard	88.1%	88.1%	88.1%	88.1%	88.1%
Percentage of employers that will pay for eye protection according to industry practice under proposed standard	91.9%	91.9%	91.9%	91.9%	91.9%
Percentage of employers that will pay for gloves according to industry practice under proposed standard	88.1%	88.1%	88.1%	88.1%	88.1%
Type of protective clothing required (PE coated Tyvek coveralls, Saranex coveralls, Tyvek coveralls, bib aprons or none)	uniforms	uniforms	uniforms	uniforms	uniforms
The unit cost for coveralls or aprons ¹	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
The annual number of replacements for coveralls or aprons ¹	0	0	0	0	0
Total number of PPE laundered per year	11,750	11,750	11,750	11,750	11,750
Unit cost of laundering one article of PPE	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50
Total Number of employees at the plant with the potential for dermal exposure	47	47	47	47	47
Type of protective eyewear required (clear indirect vent goggles, clear lens safety glasses, gray lens safety glasses or none)	clear indirect vent goggles	clear indirect vent goggles	clear indirect vent goggles	clear indirect vent goggles	clear indirect vent goggles
Unit cost of eye protection	\$10.10	\$10.10	\$10.10	\$10.10	\$10.10
Number of replacement during the year for eye protection	188	188	188	188	188
Type of gloves required (lined nitrile, powder surgical nitrile, rough PVC, none)	powder surgical nitrile	powder surgical nitrile	powder surgical nitrile	powder surgical nitrile	powder surgical nitrile
The unit cost for gloves	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24
Number of replacements during the year from gloves	23,500	23,500	23,500	23,500	23,500
Total Annualized O&M Cost for protective work clothing and equipment	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876
Total Annualized Cost	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876
Rounded Annualized Cost	\$2,172,900	\$2,172,900	\$2,172,900	\$2,172,900	\$2,172,900

¹ The unit cost of replacement for coveralls or aprons and the annual number of replacements for coveralls or aprons is zero because the unit cost of laundering

Sector 22. Printing. PPE Costs - Small Establishments.

22. PRINTING					
Cost of Personal Protective Equipment for Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	None
Required Controls	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment	Personal Protective Clothing and Equipment
Capital					
Total capital cost of personal protective clothing and equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Annualized O&M					
Number of plants represented by the model plant	400	400	400	400	400
Percentage of plants in the baseline that supplied coveralls or aprons	46%	46%	46%	46%	46%
Percentage of plants in the baseline that supply eye protection	45%	45%	45%	45%	45%
Percentage of plants in the baseline that supply gloves	46%	46%	46%	46%	46%
Percentage of employers that will pay for coveralls or aprons according to industry practice under proposed standard	88.1%	88.1%	88.1%	88.1%	88.1%
Percentage of employers that will pay for eye protection according to industry practice under proposed standard	91.9%	91.9%	91.9%	91.9%	91.9%
Percentage of employers that will pay for gloves according to industry practice under proposed standard	88.1%	88.1%	88.1%	88.1%	88.1%
Type of protective clothing required (PE coated Tyvek coveralls, Saranex coveralls, Tyvek coveralls, bib aprons or none)	uniforms	uniforms	uniforms	uniforms	uniforms
The unit cost for coveralls or aprons ¹	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
The annual number of replacements for coveralls or aprons ¹	0	0	0	0	0
Total number of PPE laundered per year	750	750	750	750	750
Unit cost of laundering one article of PPE	\$5.50	\$5.50	\$5.50	\$5.50	\$5.50
Total Number of employees at the plant with the potential for dermal exposure	3	3	3	3	3
Type of protective eyewear required (clear indirect vent goggles, clear lens safety glasses, grey lens safety glasses or none)	clear indirect vent goggles	clear indirect vent goggles	clear indirect vent goggles	clear indirect vent goggles	clear indirect vent goggles
Unit cost of eye protection	\$10.10	\$10.10	\$10.10	\$10.10	\$10.10
Number of replacement during the year for eye protection	12	12	12	12	12
Type of gloves required (lined nitrile, powder surgical nitrile, rough PVC, none)	powder surgical nitrile	powder surgical nitrile	powder surgical nitrile	powder surgical nitrile	powder surgical nitrile
The unit cost for gloves	\$0.24	\$0.24	\$0.24	\$0.24	\$0.24
Number of replacements during the year from gloves	1,500	1,500	1,500	1,500	1,500
Total Annualized O&M Cost for protective work clothing and equipment	\$985,349	\$985,349	\$985,349	\$985,349	\$985,349
Total Annualized Cost	\$985,349	\$985,349	\$985,349	\$985,349	\$985,349
Rounded Annualized Cost	\$985,300	\$985,300	\$985,300	\$985,300	\$985,300

¹ The unit cost of replacement for coveralls or aprons and the annual number of replacements for coveralls or aprons is zero because the unit cost of laundering

Sector 22. Printing. Hygiene Areas and Practices Costs - Large Establishments.

22. PRINTING					
Cost of Hygiene Areas and Practices for Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Hygiene Areas and Practices	Hygiene Areas and Practices	Hygiene Areas and Practices	Hygiene Areas and Practices	Hygiene Areas and Practices
Capital					
Number of plants represented by the model plant	100	100	100	100	100
Percent of plants requiring additional changerooms	30%	30%	30%	30%	30%
Percent of plants requiring additional handwashing facilities	30%	30%	30%	30%	30%
Percent of plants that require additional showers and employee showering	30%	30%	30%	30%	30%
Number of additional shower heads needed	3	3	3	3	3
Total number of employees at the plant exposed below the PEL but with dermal exposure	47	47	47	47	47
Total number of employees at the plant exposed above the PEL	0	0	0	0	0
Number of work shifts	3	3	3	3	3
Cost per shower head	\$5,292.39	\$5,292.39	\$5,292.39	\$5,292.39	\$5,292.39
Cost per handwashing facility	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Number of additional handwashing facilities needed	3	3	3	3	3
Unit cost of changeroom per employee	\$1,261.92	\$1,261.92	\$1,261.92	\$1,261.92	\$1,261.92
Capital cost if install showers	\$476,315	\$476,315	\$476,315	\$476,315	\$476,315
Capital cost if install handwashing facilities	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000
Capital cost of changerooms	\$593,101	\$593,101	\$593,101	\$593,101	\$593,101
Annualized					
O&M					
Useful life, in years, of change rooms	10	10	10	10	10
Useful life, in years, of handwashing facilities	10	10	10	10	10
Number of operating days per year	250	250	250	250	250
Daily janitorial and maintenance time, in minutes, per shower head	1	1	1	1	1
Janitorial wage rate, \$/hr	\$6.60	\$6.60	\$6.60	\$6.60	\$6.60
Non-supervisory wage rate, \$/hr	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Useful life, in years, of showers	10	10	10	10	10
Time, in minutes, to shower	7.50	7.50	7.50	7.50	7.50
Variable cost per shower (soap, clean towel, water, etc.)	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
Total Annualized O&M Cost if install showers and changerooms	\$710,559	\$710,559	\$710,559	\$710,559	\$710,559
+ Annualized capital cost if install showers	\$67,827	\$67,827	\$67,827	\$67,827	\$67,827
+ Annualized Capital cost if install changerooms at end of first year	\$73,208	\$73,208	\$73,208	\$73,208	\$73,208
Total Annualized Cost if install showers and changerooms	\$851,594	\$851,594	\$851,594	\$851,594	\$851,594
Rounded Annualized Cost if install showers and changerooms	\$851,600	\$851,600	\$851,600	\$851,600	\$851,600
Janitorial time to clean one handwashing facility, in minutes	10	10	10	10	10
Variable cost per handwashing facility (roll paper towels, liquid soap, water)	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06
Total Annualized O&M cost if install handwashing facilities and changerooms	\$45,900	\$45,900	\$45,900	\$45,900	\$45,900
+ Annualized capital cost if install handwashing facilities and changerooms	\$6,408	\$6,408	\$6,408	\$6,408	\$6,408
+ Annualized Capital cost if install changerooms at end of first year	\$73,208	\$73,208	\$73,208	\$73,208	\$73,208
Total Annualized Cost if install handwashing facilities and changerooms	\$125,516	\$125,516	\$125,516	\$125,516	\$125,516
Rounded Annualized cost if install handwashing facilities and changerooms	\$125,500	\$125,500	\$125,500	\$125,500	\$125,500

Sector 22. Printing. Hygiene Areas and Practices Costs - Small Establishments.

22. PRINTING					
Cost of Hygiene Areas and Practices for Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Hygiene Areas and Practices	Hygiene Areas and Practices	Hygiene Areas and Practices	Hygiene Areas and Practices	Hygiene Areas and Practices
Capital					
Number of plants represented by the model plant	400	400	400	400	400
Percent of plants requiring additional changerooms	55%	55%	55%	55%	55%
Percent of plants requiring additional handwashing facilities	55%	55%	55%	55%	55%
Percent of plants that require additional showers and employee showering	55%	55%	55%	55%	55%
Number of additional shower heads needed	2	2	2	2	2
Total number of employees at the plant exposed below the PEL but with dermal exposure	3	3	3	3	3
Total number of employees at the plant exposed above the PEL	0	0	0	0	0
Number of work shifts	2	2	2	2	2
Cost per shower head	\$5,292.39	\$5,292.39	\$5,292.39	\$5,292.39	\$5,292.39
Cost per employee for change room facilities	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Number of additional handwashing facilities	2	2	2	2	2
Unit cost of changeroom per employee	\$1,261.92	\$1,261.92	\$1,261.92	\$1,261.92	\$1,261.92
Capital cost if install showers	\$2,328,650	\$2,328,650	\$2,328,650	\$2,328,650	\$2,328,650
Capital cost if install handwashing facilities	\$220,000	\$220,000	\$220,000	\$220,000	\$220,000
Capital cost of changerooms	\$416,433	\$416,433	\$416,433	\$416,433	\$416,433
Annualized					
O&M					
Useful life, in years, of change rooms	10	10	10	10	10
Useful life, in years, of handwashing facilities	10	10	10	10	10
Number of operating days per year	250	250	250	250	250
Daily janitorial and maintenance time, in minutes, per shower head	1	1	1	1	1
Janitorial wage rate, \$/hr	\$6.60	\$6.60	\$6.60	\$6.60	\$6.60
Non-supervisory wage rate, \$/hr	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Useful life, in years, of showers	10	10	10	10	10
Time, in minutes, to shower	7.50	7.50	7.50	7.50	7.50
Variable cost per shower (soap, clean towel, water, etc.)	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
Total Annualized O&M Cost if install showers and changerooms	\$343,544	\$343,544	\$343,544	\$343,544	\$343,544
+ Annualized capital cost if install showers	\$331,600	\$331,600	\$331,600	\$331,600	\$331,600
+ Annualized Capital cost if install changerooms at end of first year	\$51,401	\$51,401	\$51,401	\$51,401	\$51,401
Total Annualized Cost if install showers and changerooms	\$726,545	\$726,545	\$726,545	\$726,545	\$726,545
Rounded Annualized Cost if install showers and changerooms	\$726,500	\$726,500	\$726,500	\$726,500	\$726,500
Janitorial time to clean one handwashing facility, in minutes	10	10	10	10	10
Variable cost per handwashing facility (roll paper towels, liquid soap, water)	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06
Total Annualized O&M cost if install handwashing facilities and changerooms	\$130,900	\$130,900	\$130,900	\$130,900	\$130,900
+ Annualized capital cost if install handwashing facilities and changerooms	\$31,328	\$31,328	\$31,328	\$31,328	\$31,328
+ Annualized Capital cost if install changerooms at end of first year	\$51,401	\$51,401	\$51,401	\$51,401	\$51,401
Total Annualized Cost if install handwashing facilities and changerooms	\$213,629	\$213,629	\$213,629	\$213,629	\$213,629
Rounded Annualized cost if install handwashing facilities and changerooms	\$213,600	\$213,600	\$213,600	\$213,600	\$213,600

Sector 22. Printing. Housekeeping Costs - Large Establishments.

22. PRINTING					
Cost of Housekeeping for Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags
Capital					
Number of plants represented by the model plant	100	100	100	100	100
Number of plants requiring new HEPA vacuums	80	80	80	80	80
Unit cost of HEPA vacuums	\$2,329.24	\$2,329.24	\$2,329.24	\$2,329.24	\$2,329.24
Number of additional HEPA vacuums required	1	1	1	1	1
Total capital cost of housekeeping	\$186,339	\$186,339	\$186,339	\$186,339	\$186,339
Annualized O&M					
Number of plants represented by the model plant	100	100	100	100	100
Number of plants requiring new HEPA vacuums	80	80	80	80	80
Number of additional HEPA vacuums required	1	1	1	1	1
Annual number of replacement filters per HEPA vacuum	2	2	2	2	2
Unit cost of HEPA vacuum replacement filters	\$312.53	\$312.53	\$312.53	\$312.53	\$312.53
Useful life, in years, of a HEPA vacuum	10	10	10	10	10
Annual O&M cost of HEPA vacuums as a percentage of capital cost (assumes 5% of capital)	\$9,316.96	\$9,316.96	\$9,316.96	\$9,316.96	\$9,316.96
Percent of plants not disposing of chromium under RCRA	0%	0%	0%	0%	0%
Number of additional garbage bags required per establishment per year	250	250	250	250	250
Unit cost of garbage bags and disposal	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Number of operating days per year	250	250	250	250	250
Janitorial time, in hours per day, to HEPA vacuum Cr(VI) spills	0.5	0.5	0.5	0.5	0.5
Janitorial wage rate, \$/hour	\$6.60	\$6.60	\$6.60	\$6.60	\$6.60
Total Annualized O&M Cost	\$125,322	\$125,322	\$125,322	\$125,322	\$125,322
+ Annualized Capital Cost	\$26,535	\$26,535	\$26,535	\$26,535	\$26,535
Total Annualized Cost	\$151,857	\$151,857	\$151,857	\$151,857	\$151,857
Rounded Annualized Cost	\$151,900	\$151,900	\$151,900	\$151,900	\$151,900

Sector 22. Printing. Housekeeping Costs - Small Establishments.

22. PRINTING					
Cost of Housekeeping for Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags	Housekeeping - Additional Control Using Wet or HEPA Vacuums and Garbage Bags
Capital					
Number of plants represented by the model plant	400	400	400	400	400
Number of plants requiring new HEPA vacuums	360	360	360	360	360
Unit cost of HEPA vacuums	\$2,329.24	\$2,329.24	\$2,329.24	\$2,329.24	\$2,329.24
Number of additional HEPA vacuums required	1	1	1	1	1
Total capital cost of housekeeping	\$838,526	\$838,526	\$838,526	\$838,526	\$838,526
Annualized O&M					
Number of plants represented by the model plant	400	400	400	400	400
Number of plants requiring new HEPA vacuums	360	360	360	360	360
Number of additional HEPA vacuums required	1	1	1	1	1
Annual number of replacement filters per HEPA vacuum	2	2	2	2	2
Unit cost of HEPA vacuum replacement filters	\$312.53	\$312.53	\$312.53	\$312.53	\$312.53
Useful life, in years, of a HEPA vacuum	10	10	10	10	10
Annual O&M cost of HEPA vacuums as a percentage of capital cost (assumes 5% of capital)	\$41,926.31	\$41,926.31	\$41,926.31	\$41,926.31	\$41,926.31
Percent of plants not disposing of chromium under RCRA	0%	0%	0%	0%	0%
Number of additional garbage bags required per establishment per year	250	250	250	250	250
Unit cost of garbage bags and disposal	\$500.00	\$500.00	\$500.00	\$500.00	\$500.00
Number of operating days per year	250	250	250	250	250
Janitorial time, in hours per day, to HEPA vacuum Cr(VI) spills	0.5	0.5	0.5	0.5	0.5
Janitorial wage rate, \$/hour	\$6.60	\$6.60	\$6.60	\$6.60	\$6.60
Total Annualized O&M Cost	\$563,949	\$563,949	\$563,949	\$563,949	\$563,949
+ Annualized Capital Cost	\$119,406	\$119,406	\$119,406	\$119,406	\$119,406
Total Annualized Cost	\$683,355	\$683,355	\$683,355	\$683,355	\$683,355
Rounded Annualized Cost	\$683,400	\$683,400	\$683,400	\$683,400	\$683,400

Sector 22. Printing. Medical Surveillance Costs - Large Establishments.

22. PRINTING					
Cost of Medical Surveillance for Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Medical Surveillance	Medical Surveillance	Medical Surveillance	Medical Surveillance	Medical Surveillance
Capital					
Number of plants represented by the model plant	100	100	100	100	100
Percent of previously exposed employees who will be found to have abnormal exam results	0.5%	0.5%	0.5%	0.5%	0.5%
Clerical Wage, \$/hr	\$8.71	\$8.71	\$8.71	\$8.71	\$8.71
Number of employees requiring comprehensive medical exam	0	0	0	0	0
Full cost of a comprehensive medical exam	\$400.76	\$400.76	\$400.76	\$400.76	\$400.76
Employee time, in hours, for a full comprehensive medical exam	3	3	3	3	3
Number of employees requiring a limited medical exam	1	1	1	1	1
Full cost of a limited medical exam	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Employee time, in hours, for a full limited medical exam	1.5	1.5	1.5	1.5	1.5
Clerical time per employee, in hours, to establish detailed medical records	1	1	1	1	1
Non-supervisory wage rate, \$/hr	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Total number of potentially exposed employees above the AL and workers with "signs and symptoms"	1	1	1	1	1
Total up-front cost of medical surveillance	\$871	\$871	\$871	\$871	\$871
Annualized O&M					
Percent of employees exposed at or above the action level 30 days per year (and therefore requiring a limited or comprehensive medical exam) who will be found to have abnormal results	0.5%	0.5%	0.5%	0.5%	0.5%
Percent of plants with annual medical testing in the baseline	80%	80%	80%	80%	80%
Percent of plants that have jobs available for employees with abnormal exam results	100%	100%	100%	100%	100%
Cost of additional medical testing after exam results are abnormal	\$213.17	\$213.17	\$213.17	\$213.17	\$213.17
Employee time, in hours, for additional medical testing after exam results are abnormal	1.5	1.5	1.5	1.5	1.5
Cost of a partial comprehensive medical exam	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38
Incremental employee time, in hours, for a partial medical exam	1.5	1.5	1.5	1.5	1.5
Cost of a partial limited medical exam	\$106.59	\$106.59	\$106.59	\$106.59	\$106.59
Incremental employee time, in hours, for a partial limited medical exam	0.75	0.75	0.75	0.75	0.75
Length of time medical removal protection benefits are required for employees that have abnormal exam results and can't switch to a job that does not have exposure to chromium (VI) in days	0	0	0	0	0
Supervisory time, in hours, for workplace reassessment after exam results are abnormal	4	4	4	4	4
Supervisory wage rate, \$/hr	\$16.90	\$16.90	\$16.90	\$16.90	\$16.90
Employee turnover rate	29.16%	29.16%	29.16%	29.16%	29.16%
% of dermally exposed employees with "signs and symptoms"	0.097%	0.097%	0.097%	0.097%	0.097%
Number of employees requiring a limited medical exam b/c > AL	0	0	0	0	0
Number of employees requiring a limited medical exam b/c of dermal "signs and symptoms"	1	1	1	1	1
Number of employees requiring a comprehensive medical exam b/c > AL	0	0	0	0	0
Number of employees requiring a comprehensive medical exam b/c of dermal "signs and symptoms"	0	0	0	0	0
Total Annualized O&M Cost	\$14,811	\$14,811	\$14,811	\$14,811	\$14,811
Total Annualized Cost	\$14,811	\$14,811	\$14,811	\$14,811	\$14,811
Rounded Annualized Cost	\$14,800	\$14,800	\$14,800	\$14,800	\$14,800

Sector 22. Printing. Medical Surveillance Costs - Small Establishments.

22. PRINTING					
Cost of Medical Surveillance for Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Medical Surveillance	Medical Surveillance	Medical Surveillance	Medical Surveillance	Medical Surveillance
Capital					
Number of plants represented by the model plant	400	400	400	400	400
Percent of previously exposed employees who will be found to have abnormal exam results	0.5%	0.5%	0.5%	0.5%	0.5%
Clerical Wage, \$/hr	\$8.71	\$8.71	\$8.71	\$8.71	\$8.71
Number of employees requiring comprehensive medical exam	0	0	0	0	0
Full cost of a comprehensive medical exam	\$400.76	\$400.76	\$400.76	\$400.76	\$400.76
Employee time, in hours, for a full comprehensive medical exam	3	3	3	3	3
Number of employees requiring a limited medical exam	1	1	1	1	1
Full cost of a limited medical exam	\$125.00	\$125.00	\$125.00	\$125.00	\$125.00
Employee time, in hours, for a full limited medical exam	1.5	1.5	1.5	1.5	1.5
Clerical time per employee, in hours, to establish detailed medical records	1	1	1	1	1
Non-supervisory wage rate, \$/hr	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Total number of potentially exposed employees above the AL and workers with "signs and symptoms"	1	1	1	1	1
Total up-front cost of medical surveillance	\$3,484	\$3,484	\$3,484	\$3,484	\$3,484
Annualized O&M					
Percent of employees exposed at or above the action level 30 days per year (and therefore requiring a limited or comprehensive medical exam) who will be found to have abnormal results	0.5%	0.5%	0.5%	0.5%	0.5%
Percent of plants with annual medical testing in the baseline	10%	10%	10%	10%	10%
Percent of plants that have jobs available for employees with abnormal exam results	50%	50%	50%	50%	50%
Cost of additional medical testing after exam results are abnormal	\$213.17	\$213.17	\$213.17	\$213.17	\$213.17
Employee time, in hours, for additional medical testing after exam results are abnormal	1.5	1.5	1.5	1.5	1.5
Cost of a partial comprehensive medical exam	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38
Incremental employee time, in hours, for a partial medical exam	1.5	2.5	3.5	4.5	5.5
Cost of a partial limited medical exam	\$106.59	\$106.59	\$106.59	\$106.59	\$106.59
Incremental employee time, in hours, for a partial limited medical exam	0.75	1.75	2.75	3.75	4.75
Length of time medical removal protection benefits are required for employees that have abnormal exam results and can't switch to a job that does not have exposure to chromium (VI) in days	0	0	0	0	0
Supervisory time, in hours, for workplace reassessment after exam results are abnormal	4	4	4	4	4
Supervisory wage rate, \$/hr	\$16.90	\$16.90	\$16.90	\$16.90	\$16.90
Employee turnover rate	29.16%	29.16%	29.16%	29.16%	29.16%
% of dermally exposed employees with "signs and symptoms"	0.097%	0.097%	0.097%	0.097%	0.097%
Number of employees requiring a limited medical exam b/c > AL	0	0	0	0	0
Number of employees requiring a limited medical exam b/c of dermal "signs and symptoms"	1	1	1	1	1
Number of employees requiring a comprehensive medical exam b/c > AL	0	0	0	0	0
Number of employees requiring a comprehensive medical exam b/c of dermal "signs and symptoms"	0	0	0	0	0
Total Annualized O&M Cost	\$102,613	\$103,096	\$103,579	\$104,061	\$104,544
Total Annualized Cost	\$102,613	\$103,096	\$103,579	\$104,061	\$104,544
Rounded Annualized Cost	\$102,600	\$103,100	\$103,600	\$104,100	\$104,500

Sector 22. Printing. Communication Costs - Large Establishments.

22. PRINTING					
Cost of Communication of Chromium (VI) Hazards to Employees for Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees
Capital					
Number of plants represented by the model plant	100	100	100	100	100
Clerical Wage rate, \$/hour	\$8.71	\$8.71	\$8.71	\$8.71	\$8.71
Clerical time, in hours, for initial training	4	4	4	4	4
Supervisory time, in hours, for initial training	32	32	32	32	32
Employee time, in hours, for initial training	4	4	4	4	4
Non-supervisory wage rate, \$/hour	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Number of potentially exposed employees above the PEL and workers with dermal exposure	47	47	47	47	47
Supervisory wage rate, \$/hour	\$16.90	\$16.90	\$16.90	\$16.90	\$16.90
Cost per employee for training aids and materials	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Bilingual Trainer Wage Rate, \$/hour	\$13.88	\$13.88	\$13.88	\$13.88	\$13.88
Number of potentially exposed employees per training session	10	10	10	10	10
Percent of plants requiring warning signs that employee is entering a regulated area signs	100%	100%	100%	100%	100%
Number of job categories exposed above the PEL	0	0	0	0	0
Number of warning signs for entering each regulated area	2	2	2	2	2
Unit cost of OSHA-regulation warning signs with mounting materials	\$3.84	\$3.84	\$3.84	\$3.84	\$3.84
Useful life, in years, of a warning sign	10	10	10	10	10
Total up-front cost of communication of hazards	\$319,974	\$319,974	\$319,974	\$319,974	\$319,974
Total capital cost of communication of hazards	\$0	\$0	\$0	\$0	\$0
Annualized					
O&M					
Annual clerical time, in hours, to prepare for annual training	0	0	0	0	0
Employee time, in hours, for annual training	0	0	0	0	0
Annual supervisory time, in hours, for initial and annual training	0	0	0	0	0
Total number of employees at the plant exposed at or above the action level	0	0	0	0	0
Total number of employees at the plant exposed below the action level but with dermal exposure	47	47	47	47	47
Employee turnover rate	29.16%	29.16%	29.16%	29.16%	29.16%
Total Annualized O&M Cost	\$101,663	\$101,663	\$101,663	\$101,663	\$101,663
+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$101,663	\$101,663	\$101,663	\$101,663	\$101,663
Rounded Annualized Cost	\$101,700	\$101,700	\$101,700	\$101,700	\$101,700

Sector 22. Printing. Communication Costs - Small Establishments.

22. PRINTING					
Cost of Communication of Chromium (VI) Hazards to Employees for Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees	Communication of Chromium (VI) Hazards to Employees
Capital					
Number of plants represented by the model plant	400	400	400	400	400
Clerical Wage rate, \$/hour	\$8.71	\$8.71	\$8.71	\$8.71	\$8.71
Clerical time, in hours, for initial training	4	4	4	4	4
Supervisory time, in hours, for initial training	8	8	8	8	8
Employee time, in hours, for initial training	4	4	4	4	4
Non-supervisory wage rate, \$/hour	\$12.07	\$12.07	\$12.07	\$12.07	\$12.07
Number of potentially exposed employees above the PEL and workers with dermal exposure	3	3	3	3	3
Supervisory wage rate, \$/hour	\$16.90	\$16.90	\$16.90	\$16.90	\$16.90
Cost per employee for training aids and materials	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Bilingual Trainer Wage Rate, \$/hour	\$13.88	\$13.88	\$13.88	\$13.88	\$13.88
Number of potentially exposed employees per training session	10	10	10	10	10
Percent of plants requiring warning signs that employee is entering a regulated area signs	100%	100%	100%	100%	100%
Number of job categories exposed above the PEL	0	0	0	0	0
Number of warning signs for entering each regulated area	2	2	2	2	2
Unit cost of OSHA-regulation warning signs with mounting materials	\$3.84	\$3.84	\$3.84	\$3.84	\$3.84
Useful life, in years, of a warning sign	10	10	10	10	10
Total up-front cost of communication of hazards	\$135,014	\$135,014	\$135,014	\$135,014	\$135,014
Total capital cost of communication of hazards	\$0	\$0	\$0	\$0	\$0
Annualized					
O&M					
Annual clerical time, in hours, to prepare for annual training	0	0	0	0	0
Employee time, in hours, for annual training	0	0	0	0	0
Annual supervisory time, in hours, for initial and annual training	0	0	0	0	0
Total number of employees at the plant exposed at or above the action level	0	0	0	0	0
Total number of employees at the plant exposed below the action level but with dermal exposure	3	3	3	3	3
Employee turnover rate	29.16%	29.16%	29.16%	29.16%	29.16%
Total Annualized O&M Cost	\$25,957	\$25,957	\$25,957	\$25,957	\$25,957
+ Annualized Capital Cost	\$0	\$0	\$0	\$0	\$0
Total Annualized Cost	\$25,957	\$25,957	\$25,957	\$25,957	\$25,957
Rounded Annualized Cost	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000

Sector 22. Printing. Recordkeeping Costs - Large Establishments.

22. PRINTING					
Cost of Recordkeeping for Large Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Recordkeeping	Recordkeeping	Recordkeeping	Recordkeeping	Recordkeeping
Capital					
Number of plants represented by the model plant	100	100	100	100	100
Total number of employees at the plant exposed above the action level	0	0	0	0	0
Total number of employees at the plant exposed below the action level but with dermal exposure	47	47	47	47	47
Cost per employee for computer file space	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
Total capital cost of recordkeeping	\$4,700.00	\$4,700.00	\$4,700.00	\$4,700.00	\$4,700.00
Annualized O&M					
Clerical wage rate, \$/hour	\$8.71	\$8.71	\$8.71	\$8.71	\$8.71
Useful life, in years, of computer file space	10	10	10	10	10
Annual incremental clerical recordkeeping time per employee, in hours	1.5	1.5	1.5	1.5	1.5
Total Annualized O&M Cost	\$61,406	\$61,406	\$61,406	\$61,406	\$61,406
+ Annualized capital cost of recordkeeping	\$669	\$669	\$669	\$669	\$669
Total Annualized Cost	\$62,075	\$62,075	\$62,075	\$62,075	\$62,075
Rounded Annualized Cost	\$62,100	\$62,100	\$62,100	\$62,100	\$62,100

Sector 22. Printing. Recordkeeping Costs - Small Establishments.

22. PRINTING					
Cost of Recordkeeping for Small Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Required Controls	Recordkeeping	Recordkeeping	Recordkeeping	Recordkeeping	Recordkeeping
Capital					
Number of plants represented by the model plant	400	400	400	400	400
Total number of employees at the plant exposed above the action level	0	0	0	0	0
Total number of employees at the plant exposed below the action level but with dermal exposure	3	3	3	3	3
Cost per employee for computer file space	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
Total capital cost of recordkeeping	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00	\$1,200.00
Annualized O&M					
Clerical wage rate, \$/hour	\$8.71	\$8.71	\$8.71	\$8.71	\$8.71
Useful life, in years, of computer file space	10	10	10	10	10
Annual incremental clerical recordkeeping time per employee, in hours	1.5	1.5	1.5	1.5	1.5
Total Annualized O&M Cost	\$15,678	\$15,678	\$15,678	\$15,678	\$15,678
+ Annualized capital cost of recordkeeping	\$171	\$171	\$171	\$171	\$171
Total Annualized Cost	\$15,849	\$15,849	\$15,849	\$15,849	\$15,849
Rounded Annualized Cost	\$15,800	\$15,800	\$15,800	\$15,800	\$15,800

Sector 22. Printing. Total Costs - Large Establishments.

Annualized Cost Required to Achieve Alternative PEL During the First Year for Large Printing Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$333,873	\$333,873	\$333,873	\$333,873	\$333,873
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876
Hygiene Areas and Practices					
If install showers and changerooms	\$851,600	\$851,600	\$851,600	\$851,600	\$851,600
If install handwashing facilities and changerooms	\$125,500	\$125,500	\$125,500	\$125,500	\$125,500
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$151,900	\$151,900	\$151,900	\$151,900	\$151,900
Medical Surveillance	\$15,682	\$15,682	\$15,682	\$15,682	\$15,682
Communication of Chromium (VI) Hazards to Employees	\$421,674	\$421,674	\$421,674	\$421,674	\$421,674
Recordkeeping	\$62,100	\$62,100	\$62,100	\$62,100	\$62,100
Total Annualized Cost in the First Year to Achieve Alternative PEL					
If install showers and changerooms	\$4,009,706	\$4,009,706	\$4,009,706	\$4,009,706	\$4,009,706
If install handwashing facilities and changerooms	\$3,283,606	\$3,283,606	\$3,283,606	\$3,283,606	\$3,283,606

Annualized Cost Required to Achieve Alternative PEL After the First Year for Large Printing Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$0	\$0	\$0	\$0	\$0
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876
Hygiene Areas and Practices					
If install showers and changerooms	\$851,600	\$851,600	\$851,600	\$851,600	\$851,600
If install handwashing facilities and changerooms	\$125,500	\$125,500	\$125,500	\$125,500	\$125,500
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$151,900	\$151,900	\$151,900	\$151,900	\$151,900
Medical Surveillance	\$14,811	\$14,811	\$14,811	\$14,811	\$14,811
Communication of Chromium (VI) Hazards to Employees	\$101,700	\$101,700	\$101,700	\$101,700	\$101,700
Recordkeeping	\$62,100	\$62,100	\$62,100	\$62,100	\$62,100
Total Annualized Cost to Achieve Alternative PEL After the First Year					
If install showers and changerooms	\$3,354,987	\$3,354,987	\$3,354,987	\$3,354,987	\$3,354,987
If install handwashing facilities and changerooms	\$2,628,887	\$2,628,887	\$2,628,887	\$2,628,887	\$2,628,887

10 Year Annual Cost Required to Achieve Alternative PEL for Large Printing Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$47,536	\$47,536	\$47,536	\$47,536	\$47,536
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876	\$2,172,876
Hygiene Areas and Practices					
If install showers and changerooms	\$851,600	\$851,600	\$851,600	\$851,600	\$851,600
If install handwashing facilities and changerooms	\$125,500	\$125,500	\$125,500	\$125,500	\$125,500
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$151,900	\$151,900	\$151,900	\$151,900	\$151,900
Medical Surveillance	\$14,935	\$14,935	\$14,935	\$14,935	\$14,935
Communication of Chromium (VI) Hazards to Employees	\$147,257	\$147,257	\$147,257	\$147,257	\$147,257
Recordkeeping	\$62,100	\$62,100	\$62,100	\$62,100	\$62,100
Total Annualized Cost to Achieve Alternative PEL After the First Year					
If install showers and changerooms	\$3,448,204	\$3,448,204	\$3,448,204	\$3,448,204	\$3,448,204
If install handwashing facilities and changerooms	\$2,722,104	\$2,722,104	\$2,722,104	\$2,722,104	\$2,722,104

Sector 22. Printing. Total Costs - Small Establishments.

Annualized Cost Required to Achieve Alternative PEL During the First Year for Small Printing Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$750,376	\$750,376	\$750,376	\$750,376	\$750,376
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$985,349	\$985,349	\$985,349	\$985,349	\$985,349
Hygiene Areas and Practices					
If install showers and changerooms	\$726,500	\$726,500	\$726,500	\$726,500	\$726,500
If install handwashing facilities and changerooms	\$213,600	\$213,600	\$213,600	\$213,600	\$213,600
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$683,400	\$683,400	\$683,400	\$683,400	\$683,400
Medical Surveillance	\$106,097	\$106,580	\$107,063	\$107,545	\$108,028
Communication of Chromium (VI) Hazards to Employees	\$161,014	\$161,014	\$161,014	\$161,014	\$161,014
Recordkeeping	\$15,800	\$15,800	\$15,800	\$15,800	\$15,800
Total Annualized Cost In the First Year to Achieve Alternative PEL					
If install showers and changerooms	\$3,428,537	\$3,429,019	\$3,429,502	\$3,429,985	\$3,430,468
If install handwashing facilities and changerooms	\$2,915,837	\$2,916,119	\$2,916,602	\$2,917,085	\$2,917,568

Annualized Cost Required to Achieve Alternative PEL After the First Year for Small Printing Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$0	\$0	\$0	\$0	\$0
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$985,349	\$985,349	\$985,349	\$985,349	\$985,349
Hygiene Areas and Practices					
If install showers and changerooms	\$726,500	\$726,500	\$726,500	\$726,500	\$726,500
If install handwashing facilities and changerooms	\$213,600	\$213,600	\$213,600	\$213,600	\$213,600
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$683,400	\$683,400	\$683,400	\$683,400	\$683,400
Medical Surveillance	\$102,613	\$103,096	\$103,579	\$104,061	\$104,544
Communication of Chromium (VI) Hazards to Employees	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000
Recordkeeping	\$15,800	\$15,800	\$15,800	\$15,800	\$15,800
Total Annualized Cost to Achieve Alternative PEL After the First Year					
If install showers and changerooms	\$2,539,662	\$2,540,145	\$2,540,628	\$2,541,111	\$2,541,593
If install handwashing facilities and changerooms	\$2,026,762	\$2,027,245	\$2,027,728	\$2,028,211	\$2,028,693

10 Year Annual Cost Required to Achieve Alternative PEL for Small Printing Establishments					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$106,837	\$106,837	\$106,837	\$106,837	\$106,837
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$985,349	\$985,349	\$985,349	\$985,349	\$985,349
Hygiene Areas and Practices					
If install showers and changerooms	\$726,500	\$726,500	\$726,500	\$726,500	\$726,500
If install handwashing facilities and changerooms	\$213,600	\$213,600	\$213,600	\$213,600	\$213,600
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$683,400	\$683,400	\$683,400	\$683,400	\$683,400
Medical Surveillance	\$103,109	\$103,592	\$104,075	\$104,557	\$105,040
Communication of Chromium (VI) Hazards to Employees	\$45,223	\$45,223	\$45,223	\$45,223	\$45,223
Recordkeeping	\$15,800	\$15,800	\$15,800	\$15,800	\$15,800
Total Annualized Cost to Achieve Alternative PEL After the First Year					
If install showers and changerooms	\$2,666,218	\$2,666,701	\$2,667,184	\$2,667,666	\$2,668,149
If install handwashing facilities and changerooms	\$2,153,318	\$2,153,801	\$2,154,284	\$2,154,766	\$2,155,249

Sector 22. Printing. Cost per Establishment - Large Establishments.

Annualized Cost Required to Achieve Alternative PEL During the First Year for One Large Printing Establishment Based on the Model Plant					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$3,339	\$3,339	\$3,339	\$3,339	\$3,339
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$21,729	\$21,729	\$21,729	\$21,729	\$21,729
Hygiene Areas and Practices					
If install showers and changerooms	\$8,516	\$8,516	\$8,516	\$8,516	\$8,516
If install handwashing facilities and changerooms	\$1,255	\$1,255	\$1,255	\$1,255	\$1,255
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$1,519	\$1,519	\$1,519	\$1,519	\$1,519
Medical Surveillance	\$25	\$157	\$157	\$157	\$157
Communication of Chromium (VI) Hazards to Employees	\$4,217	\$4,217	\$4,217	\$4,217	\$4,217
Recordkeeping	\$621	\$621	\$621	\$621	\$621
Total Annualized Cost in the First Year to Achieve Alternative PEL					
If install showers and changerooms	\$39,965	\$40,097	\$40,097	\$40,097	\$40,097
If install handwashing facilities and changerooms	\$32,704	\$32,836	\$32,836	\$32,836	\$32,836

Annualized Cost Required to Achieve Alternative PEL After the First Year for One Large Printing Establishment Based on the Model Plant					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$0	\$0	\$0	\$0	\$0
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$21,729	\$21,729	\$21,729	\$21,729	\$21,729
Hygiene Areas and Practices					
If install showers and changerooms	\$8,516	\$8,516	\$8,516	\$8,516	\$8,516
If install handwashing facilities and changerooms	\$1,255	\$1,255	\$1,255	\$1,255	\$1,255
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$1,519	\$1,519	\$1,519	\$1,519	\$1,519
Medical Surveillance	\$148	\$148	\$148	\$148	\$148
Communication of Chromium (VI) Hazards to Employees	\$1,017	\$1,017	\$1,017	\$1,017	\$1,017
Recordkeeping	\$621	\$621	\$621	\$621	\$621
Total Annualized Cost to Achieve Alternative PEL After the First Year					
If install showers and changerooms	\$33,550	\$33,550	\$33,550	\$33,550	\$33,550
If install handwashing facilities and changerooms	\$26,289	\$26,289	\$26,289	\$26,289	\$26,289

10 Year Annual Cost Required to Achieve Alternative PEL for One Large Printing Establishment					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$475	\$475	\$475	\$475	\$475
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$21,729	\$21,729	\$21,729	\$21,729	\$21,729
Hygiene Areas and Practices					
If install showers and changerooms	\$8,516	\$8,516	\$8,516	\$8,516	\$8,516
If install handwashing facilities and changerooms	\$1,255	\$1,255	\$1,255	\$1,255	\$1,255
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$1,519	\$1,519	\$1,519	\$1,519	\$1,519
Medical Surveillance	\$131	\$149	\$149	\$149	\$149
Communication of Chromium (VI) Hazards to Employees	\$1,473	\$1,473	\$1,473	\$1,473	\$1,473
Recordkeeping	\$621	\$621	\$621	\$621	\$621
Total Annualized Cost to Achieve Alternative PEL After the First Year					
If install showers and changerooms	\$34,463	\$34,482	\$34,482	\$34,482	\$34,482
If install handwashing facilities and changerooms	\$27,202	\$27,221	\$27,221	\$27,221	\$27,221

Sector 22. Printing. Cost per Establishment - Small Establishments.

Annualized Cost Required to Achieve Alternative PEL During the First Year for One Small Printing Establishment Based on the Model Plant					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$1,876	\$1,876	\$1,876	\$1,876	\$1,876
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$2,463	\$2,463	\$2,463	\$2,463	\$2,463
Hygiene Areas and Practices					
If install showers and changerooms	\$1,816	\$1,816	\$1,816	\$1,816	\$1,816
If install handwashing facilities and changerooms	\$534	\$534	\$534	\$534	\$534
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$1,709	\$1,709	\$1,709	\$1,709	\$1,709
Medical Surveillance	\$265	\$266	\$268	\$269	\$270
Communication of Chromium (VI) Hazards to Employees	\$403	\$403	\$403	\$403	\$403
Recordkeeping	\$40	\$40	\$40	\$40	\$40
Total Annualized Cost in the First Year to Achieve Alternative PEL					
If install showers and changerooms	\$8,571	\$8,573	\$8,574	\$8,575	\$8,576
If install handwashing facilities and changerooms	\$7,289	\$7,290	\$7,292	\$7,293	\$7,294

Annualized Cost Required to Achieve Alternative PEL After the First Year for One Small Printing Establishment Based on the Model Plant					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$0	\$0	\$0	\$0	\$0
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$2,463	\$2,463	\$2,463	\$2,463	\$2,463
Hygiene Areas and Practices					
If install showers and changerooms	\$1,816	\$1,816	\$1,816	\$1,816	\$1,816
If install handwashing facilities and changerooms	\$534	\$534	\$534	\$534	\$534
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$1,709	\$1,709	\$1,709	\$1,709	\$1,709
Medical Surveillance	\$257	\$259	\$259	\$260	\$261
Communication of Chromium (VI) Hazards to Employees	\$65	\$65	\$65	\$65	\$65
Recordkeeping	\$40	\$40	\$40	\$40	\$40
Total Annualized Cost to Achieve Alternative PEL After the First Year	\$6,883	\$6,884	\$6,886	\$6,887	\$6,888
If install showers and changerooms	\$6,349	\$6,350	\$6,352	\$6,353	\$6,354
If install handwashing facilities and changerooms	\$5,067	\$5,068	\$5,069	\$5,071	\$5,072

10 Year Annual Cost Required to Achieve Alternative PEL for One Small Printing Establishment					
Alternative PEL (ug/m3)	10	5	1	0.5	0.25
Affected Job Category	All	All	All	All	All
Engineering Controls	\$0	\$0	\$0	\$0	\$0
Exposure Monitoring	\$267	\$267	\$267	\$267	\$267
Regulated Areas - Signs and Labels	\$0	\$0	\$0	\$0	\$0
Respirator Fitting	\$0	\$0	\$0	\$0	\$0
Respirator Protection	\$0	\$0	\$0	\$0	\$0
Personal Protective Equipment	\$2,463	\$2,463	\$2,463	\$2,463	\$2,463
Hygiene Areas and Practices					
If install showers and changerooms	\$1,816	\$1,816	\$1,816	\$1,816	\$1,816
If install handwashing facilities and changerooms	\$534	\$534	\$534	\$534	\$534
Housekeeping - Additional Control Using Wet or HEPA Vacuums	\$1,709	\$1,709	\$1,709	\$1,709	\$1,709
Medical Surveillance	\$258	\$259	\$260	\$261	\$263
Communication of Chromium (VI) Hazards to Employees	\$113	\$113	\$113	\$113	\$113
Recordkeeping	\$40	\$40	\$40	\$40	\$40
Total Annualized Cost to Achieve Alternative PEL After the First Year					
If install showers and changerooms	\$6,666	\$6,667	\$6,668	\$6,669	\$6,670
If install handwashing facilities and changerooms	\$5,383	\$5,385	\$5,386	\$5,387	\$5,388

Sector 22. Printing.

ESTABLISHMENTS		Total	Affected Establishments	
	Industry		Number	Percentage
Establishments with < 20 Employees	2,874		400	13.92%
Establishments with ≥ 20 Employees	370		100	27.03%
TOTAL	3,244		500	15.41%

EMPLOYEES		Total	Affected Establishments	
	Industry		Number	Percentage
Establishments with < 20 Employees	13,170		1,833	13.92%
Establishments with ≥ 20 Employees	24,671		6,668	27.03%
TOTAL	37,841		8,501	22.46%

REVENUES		Total	Affected Establishments	
	Industry		Total	per Establishment
Establishments with < 20 Employees	\$ 1,119,058,569	\$	155,749,279	\$ 389,373
Establishments with ≥ 20 Employees	\$ 2,096,301,743	\$	566,568,039	\$ 5,665,680
TOTAL	\$ 3,215,360,312	\$	722,317,318	\$ 1,444,635

PROFITS		Rate	Affected Establishments	
			Total	per Establishment
Establishments < 20	4.27%	\$	6,642,862	\$ 16,607
Establishments ≥ 20	4.27%	\$	24,164,693	\$ 241,647
TOTAL	4.27%	\$	30,807,556	\$ 61,615

ENTERPRISES & ESTABLISHMENTS, BY ENTERPRISE & ESTABLISHMENT SIZE		Affected Enterprises	Affected Establishments
Small Business / < 20 Employees		396	399
Small Business / ≥ 20 Employees		94	94
TOTAL SMALL		490	493
Large Business / < 20 Employees			1
Large Business / ≥ 20 Employees			6
TOTAL LARGE		5	7
TOTAL		495	500

REVENUE & PROFITS, BY ENTERPRISE & ESTABLISHMENT SIZE		Revenue	Profits
Small Business / < 20 Employees		\$ 155,359,906	\$ 6,626,255
Small Business / ≥ 20 Employees		\$ 532,573,956	\$ 22,714,812
SUBTOTAL SMALL		\$ 687,933,862	\$ 29,341,067
Large Business / < 20 Employees		\$ 389,373	\$ 16,607
Large Business / ≥ 20 Employees		\$ 33,994,082	\$ 1,449,882
SUBTOTAL LARGE		\$ 34,383,456	\$ 1,466,489

Impacts on Printing

BASELINE VALUES		Revenue		Profits		Rate
	Total	per Business	Total	per Business		
Small Businesses	\$ 687,933,862	\$ 1,403,947	#####	\$ 59,880	4.27%	
Large Businesses	\$ 34,383,456		\$ 1,466,489		4.27%	
All Businesses	\$ 722,317,318		#####		4.27%	

PEL = 10 ug/m3		Compliance Costs		Profit Rate	
	Total	per Business	% Revenue	% Profits	After Costs
Small Businesses	\$ 4,706,713	\$ 9,608	0.68%	16.04%	3.58%
Large Businesses	\$ 168,710		0.49%	11.50%	3.77%
All Businesses	\$ 4,875,422		0.67%	15.83%	3.59%

PEL = 5.0 ug/m3		Compliance Costs		Profit Rate	
	Total	per Business	% Revenue	% Profits	After Costs
Small Businesses	\$ 4,707,194	\$ 9,607	0.68%	16.04%	3.58%
Large Businesses	\$ 168,711		0.49%	11.50%	3.77%
All Businesses	\$ 4,875,905		0.68%	15.83%	3.59%

PEL = 1.0 ug/m3		Compliance Costs		Profit Rate	
	Total	per Business	% Revenue	% Profits	After Costs
Small Businesses	\$ 4,707,676	\$ 9,608	0.68%	16.04%	3.58%
Large Businesses	\$ 168,712		0.49%	11.50%	3.77%
All Businesses	\$ 4,876,388		0.68%	15.83%	3.59%

PEL = 0.5 ug/m3		Compliance Costs		Profit Rate	
	Total	per Business	% Revenue	% Profits	After Costs
Small Businesses	\$ 4,708,158	\$ 9,608	0.68%	16.05%	3.58%
Large Businesses	\$ 168,713		0.49%	11.50%	3.77%
All Businesses	\$ 4,876,871		0.68%	15.83%	3.59%

PEL = 0.25 ug/m3		Compliance Costs		Profit Rate	
	Total	per Business	% Revenue	% Profits	After Costs
Small Businesses	\$ 4,708,639	\$ 9,609	0.68%	16.05%	3.58%
Large Businesses	\$ 168,714		0.49%	11.50%	3.77%
All Businesses	\$ 4,877,354		0.68%	15.83%	3.59%

* Source of Data on Revenue and Profit Rate: I.R.S., Corporation Source Book of Statistics of Income, 2000